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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/663,077	09/16/2003	Hiroshi Funada	TJK/416	2051

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EXAMINER

ANGEBRANNDT, MARTIN J

ART UNIT	PAPER NUMBER
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1756

DATE MAILED: 03/29/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/663,077

Applicant(s)

FUNADA ET AL.

Examiner

Martin J. Angebranndt

Art Unit

1756

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 12/21/05 & 12/29/03.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-7 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-7 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-7 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claims should clearly state where the salient line and the reentrant line are. (Ie the reentrant line is across the bottom of the reentrant feature and the salient line is across the top of the salient feature) **...using language from the specification and indentify where in the specification that language is found to forestall and new matter issues. The applicant may also wish to amend the figures to illustrate these features.**

The examiner has interpreted the claims to require that the cross sectional area of the salient/protrusion above the middle line is larger than the cross sectional area of the adjacent reentrant/recess below the middle line to the bottom of the reentrant/recess.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

Art Unit: 1756

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. Claim 4 is rejected under 35 U.S.C. 102(b) as being fully anticipated by Narita et al. '027.

In examples 1, there is a polycarbonate substrate, which has a land width of 0.3 microns, and a groove width of 0.6 microns with the features being rectangular in cross-section. This repeats regularly across the surface and is a grating pattern. The examiner holds that this is inherently able to act as an embossing/duplication plate is polycarbonate and the photosensitive resins are soft prior to curing. Note that the instant specification described the use of polycarbonate in section [0087] of the prepub as the duplication plate material.

6. Claim 4 is rejected under 35 U.S.C. 102(b) as being fully anticipated by Edwards WO 99/52105.

Edwards WO 99/52105 describes master disks which can be used in disk molding processes to form replica disks having wide flat lands and deep narrow grooves. (10/25-11/5). In figures 16-18, the pitch is 0.375 microns (375 nm) and the width at the flat bottom of the groove is 146, 185 or 205 nm. Figure 19 shows the use of intermediate masters. The use of molding to form the optical disk substrates is disclosed. (17/1-10 and 18/5-15). Photopolymers for forming replication layer (replica disks) are disclosed. (page 20)

As the width of the flat part of the recess is nearly equal to or greater than $\frac{1}{2}$ the pitch and the protrusions are pointed (ie no width), the cross-sectional area of the protrusions above the midline is held to be less than the cross-sectional area of the recesses below the mid-depth line of the recesses.

Art Unit: 1756

7. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over by Edwards WO 99/52105, in view of Nebashi et al. '870 and Takahashi et al. JP 02-010536.

Nebashi et al. '870 teaches the formation of a stamping master, where the grooves having a width of 0.35 microns are formed in the stamping master, which is then coated with a light curing resin, a backing plate applied and UV light used to cure the resin to form an optical recording medium substrate of an olefin polymer with the grooves being formed in a UV cured resin, which is then coated to form the recording medium. (10/23-45)

Takahashi et al. JP 02-010536 (translation attached) teaches molding optical recording media substrates and establishes the equivalence of injection, compression and 2P (polymerization) molding processes (translation on page marked 16, last full paragraph).

It would have been obvious to use the master of Edwards WO 99/52105 directly to form a replica disk using a 2P process such as that described by Nebashi et al. '870, where a radiation curable resin is used to form the replica optical disk substrate based upon the direction to molding and the use of photopolymerizable materials to form replicas by Edwards WO 99/52105 and the disclosure of equivalence in the various molding techniques by Takahashi et al. JP 02-010536.

As the correlogations are circular, their direction is considered to change continuously, thereby meeting the limitations of claim 6.

8. Claim 4 is rejected under 35 U.S.C. 102(e) as being fully anticipated by Furuta et al. '906.

Art Unit: 1756

See the examples corresponding to figure 21, where the final articles has grooves which are narrower than the lands/protrusions. Not the mold (240,204,224) which is used to make this would have narrow protrusions and wide grooves.

9. Claims 1-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Webster et al. '385, in view of Martens '850.

Webster et al. '385 teaches the formation of diffraction gratings where the relief pattern is embossed into a plastic sheet, metalized, and then overcoated with an adhesive layer and a protective layer. The duty cycle is chosen based upon the optimum according to Maxwell's equations according to the desired color saturation (7/45-53 and 8/47-9/7). The grating pitch determines the color (10/19 and the formation of two areas having different gratings is disclosed with respect to figure 4.

Martens '850 teaches methods for replicating diffraction gratings, video disks and the like using photocurable compositions. (1/5-14). These processes are described as having better fidelity of the original image than hot stamping or other embossing processes. (1/15-26). Various masters are disclosed (39/13-40/5). In example 21, the process is described with respect to figure 9, as the photocurable resins is pumped onto the master dies bearing the relief pattern, the back is provided with a polyester backing/support, the UV mercury arc lamps are used to cure the resin, resulting the patterned laminate bearing a (diffractive) Fresnel lens (55/11-50). Figures 10B shows the case where either large or small protrusions relative to the grooves/recesses are formed (4/8-38).

It would have been obvious to one skilled in the art to modify the teachings of Webster et al. '385 to use duty cycles or more than 50% in the optimization of the color saturation according

Art Unit: 1756

to Maxwell's equations based upon the direction to do so and to use other processes, such as that of Martens '850 using photocurable resins, in place of the stamping methods to increase the fidelity as taught by Martens '850.

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Hojo et al. '385, Mallik et al. '548 and D'amato '227 teach embossing using photocurable resins.

Toda et al. '565 teach multiple gratings with different orientations.

Knop 347 teaches gratings with different depths.

11. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Martin J. Angebranntdt whose telephone number is 571-272-1378. The examiner can normally be reached on Monday-Thursday and alternate Fridays.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Huff can be reached on 571-272-1385. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Application/Control Number: 10/663,077

Page 7

Art Unit: 1756



Martin J. Angebranndt
Primary Examiner
Art Unit 1756

03/22/2006